Concordia
UNIVERSITY
Spring
1990-91

The Affiliate

For supporters of the Faculty of
Engineering and Computer Science

Gas truck ready for the long haul

by Shawn Apel

Concordia's student branch of the Society of Automotive Engineers (SAE) is working against time and around the clock to get ready for the Natural Gas Vehicle Challenge.

Concordia will compete against 23 other North American schools in a rally from Oklahoma to Michigan between June 9 and 15, driving trucks converted to natural gas.

All automotive engineers are members of the SAE, which has chapters at many schools. Concordia's SAE has had the truck since Dec. 7, when it was presented to its members by General Motors (GM). The University won the truck after its design proposal for conversion to natural gas was approved by GM.

Work on the conversion is proceeding at a frantic pace because of delays in getting the truck and in delivery of necessary parts. But Dennis Kefallinos, coordinator of Concordia's Natural Gas Vehicle Project, said his crew has received most of the parts and that work is well underway. And, Kefallinos added, morale is certainly no problem.

George Bilodeau, GM Director of Fleet Sales, acknowledged the students' important work with alternate sources of energy, as he kicked off the company's final year of a five-year commitment to student engineering. He said this was part of GM's effort to prepare for the future.

Competing trucks at the Challenge will be tested for noise levels, cold starting, gas consumption and emissions, as well as other factors. Bilodeau suggested the winning entry will be "one per cent inspiration and 99 per cent perspiration." He said the students are allowed to change anything they feel will improve the performance of the truck.

Sponsorship for the natural gas project, which will cost Concordia's branch of the SAE about $40,000, is coming in. The Canadian Gas Association has given $10,000 to Concordia, as well as to the three other Canadian entries. And, Concordia's SAE members are waiting for $7,000 (U.S.) which the Society has collected from various companies, including Goodyear and United Parcel Service. Gaz Metropolitaine, the Québec natural gas utility, has also contributed money to the project.

Concordia's SAE branch made a presentation about its participation in the Natural Gas Vehicle Challenge at the Montréal-SAE dinner held in January, with Max E. Rumbaugh, Vice-President of North American SAE, in attendance.

The key figures in the natural Gas Vehicle Challenge: SAE students and their advisor, Tadeusz Krepec (front left), (from left to right) Leonard Kantor, President of Avenue Pontiac Buick, whose dealership donated the truck, Dennis Kefallinos,Coordinator of the Project, and George Bilodeau, Director of Sales of Parcs Autos GM Canada. The second truck belongs to École Polytechnique which graciously lent Concordia its vehicle for the photo.

Canada's Governor General establishes scholarship in environmental engineering

Governor General Ramon Hnatyshyn has announced the establishment of the Governor General's Canada Scholarship in Environmental Engineering in recognition of the leadership role Canada Scholars can play in resolving national and international environmental problems.

Twenty-five $1,000 awards will be given to engineering students entering their last undergraduate year. The award will go to students who have maintained Canada Scholar standards, have a high environmental content in their engineering programmes and have demonstrated a commitment to environmental action.

Nominations are to be made by deans of engineering faculties and submitted to the Association of Universities and Colleges of Canada (AUCC) by July 15. Announcement of the awards will be made on October 15th.

recycled paper

Sick-building syndrome under study

by Daniel Kucharsky

Centre for Building Studies (CBS) Professor Fariborz Haghighat says that though sick-builidng syndrome is widespread, help is on the way.

Together with the Institut de recherche en santé et en sécurité du travail du Québec, researchers at CBS are in the middle of a two-year study of occupants of two floors of a 10-storey office building in Montréal.

Sick-building syndrome is a creation of the 1970s, when the energy crisis sent everyone scrambling to control energy-sapping leaks in buildings. Hermetically sealed windows puts the burden of providing fresh air and removing contaminants on a building's ventilation system. When the system doesn't do its job, sick-building syndrome is the result.

Building-related illnesses cost $3 billion in lost annual productivity in the U.S. The results are likely similar for Canada...

Occupants of sick buildings develop such symptoms as headaches, fatigue, dizziness, difficulty in concentrating, eye irritations and dry throat. A building is considered "sick" if more than 20 per cent of its occupants complain about the quality of air and if their symptoms disappear soon after leaving the building.

According to American studies, 65 per cent of office buildings in the United States are sick. Building-related illnesses cost $3 billion in lost annual productivity in the U.S.. The results are likely similar for Canada, Haghighat said.

Studies done by the downtown Montréal CLSC have shown that up to 80 per cent of downtown office workers have complained about air quality at work. And, in 1987, more than 1,800 office buildings in Canada were investigated for poor air quality after similar complaints. In the CBS study, carbon dioxide levels are being controlled on only one of the two floors being surveyed. Occupants working on the two floors of the building are not aware the study is being conducted.

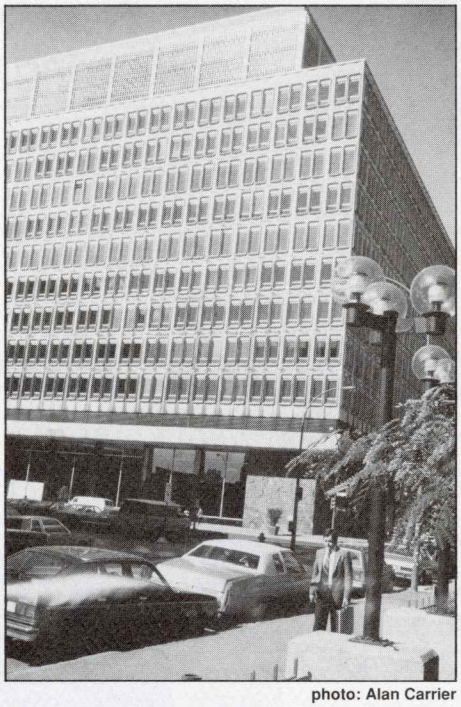


photo: Alan Carrier

Improving air quality will be one of the priorities in upcoming renovations at the downtown Henry F. Hall Building.

Although the normal carbon dioxide level is 1,000 parts per million, the level on the controlled floor is maintained at less than 700 parts per million. The level of carbon dioxide, produced in respiration, indicates the efficiency of a building's ventilation system. Preliminary results show that on the controlled floor, the level of contaminants and energy consumption is down, as are complaints about ailments suffered by the occupants. The study is also measuring air velocity, temperature, wind fluctuations and workers' absenteeism rates.

Although the results of the study will likely be useful, controlling carbon dioxide is not a cure-all for indoor air-quality problems, Haghighat said. Other contaminants such as formaldehyde, dust and volatile organic components must also be examined closely, as well as the selection of building materials, furniture, carpets, carpet glue and paint.

Haghighat, CBS Director Paul Fazio and a research assistant will soon begin a study on the effect of office partitions on air-flow patterns. No significant research on the role of dividers, common in today's office buildings, and their effect on indoor air quality, has been done to date.

Air diagnostics is a field that may mean open markets for students because of a lack of qualified people, Haghighat said. CBS offers the only programme of this kind in Canada.

A life of bridges

by Buzz Bourdon

photo: Charles Bélanger

Michael Troitsky

For Civil Engineering Professor Michael Troitsky, bridges are things of beauty, worth visiting to admire their designs and lines.

Troitsky, who travelled the world to visit bridges, is an international expert. Last March, his latest book on bridges, *Prestressed Steel Bridges*, was published by Van Nostrand Reinhold.

Troitsky, who has been teaching at Concordia since 1967, has introduced a number of courses on bridges at the graduate level. A graduate of the University of Belgrade in Yugoslavia, Troitsky has taught at McGill, Université de Montréal and the University of California at Los Angeles.

As chief bridge engineer decades ago with Foundation Co. of Canada, he directed, designed and supervised the construction of major bridges at Burlington Bay, Ont., Mattagami, Ont., Jemseg, N.B., Fredericton, N.B. and the Revelstoke suspension bridge in B.C., among others. He is the author of another five books on bridges, as well as engineering and research papers in both areas. He is presently working on computerized planning and design of bridges.

San Francisco's Golden Gate Bridge is one of Troitsky's favourite bridges. He also admires Montréal's Victoria Bridge, built by Robert Stephensen, the noted British engineer. It opened in 1860.

"What's extraordinary is the design. He came here in winter and saw how much ice is in the river. So, he built the piers that support the bridge as a wedge and at an inclination to break the ice. The design is still successful and has been introduced elsewhere."

Costa Rican Dean Clara Zomer visits Concordia

by Mary Frances Hill

Clara Zomer calls herself a survivor. As the only woman among 200 students in the Civil Engineering programme at the University of Costa Rica (UCR) in the 1950s, she was no stranger to injustice and practical jokes. Classmates wrote obscenities in her notebooks and surprised her with "gift" rodents. She often felt the marks she received were a poor reflection of the work she had handed in to her professors.

'When there is an injustice done to you, do you ignore it, or defend yourself?'

Success is its own sweet revenge and now, as Vice-Dean of the Faculty of Engineering at her alma mater, Zomer said she is more than a survivor, she is a product of her own rationality, determination and self-control.

Zomer was at Concordia in November to meet with members of the Faculty of Engineering and Computer Science and she took the time to address the Engineering and Computer Science Students' Association (ECA). She recounted her experiences as not only the first female student in UCR's engineering faculty, but later as its only woman professor - and now, its sole female administrator. She said many of the difficulties she encountered as a student and a working engineer were unique to her because of her sex.

During her visit to Concordia, Clara Zomer conducted extensive discussions with Dean M.N.S. Swamy (right) and Special Coordinator T.S. Sankar. The discussions identified training areas for future cooperation. In February, a Concordia delegation made a follow-up visit to Costa Rica. The ***Affiliate*** *will publish a report in an upcoming issue.*

"When there is an injustice done to you, do you ignore it, or defend yourself?" she asked. Fearing she would be labelled as too aggressive, Zomer kept a low profile. "Many times I chose not to defend myself." She explained how women in Central America are socialized to be submissive in classrooms or professional situations.

"Many (women) students are not taught how to speak in public. They use very weak voices, as if they were asking forgiveness for talking." Zomer rose above these conditions and concluded with some advice for women engineers entering a male-dominated workplace. "When you're caught in a stereotypical or unchallenging job, you have to know when to walk away."

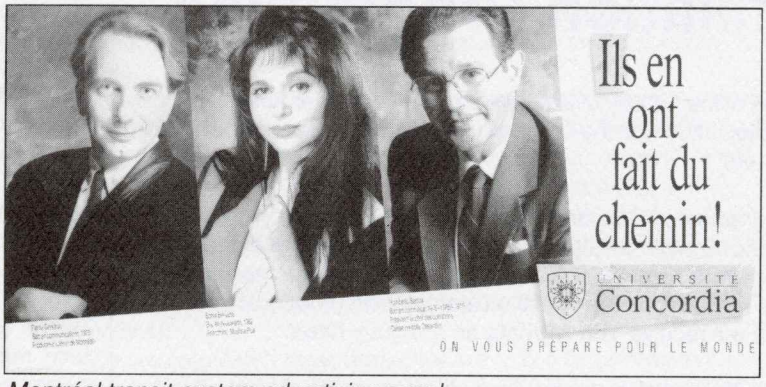
Concordia launches three-year image campaign

University proposes "Real Education for the Real World"

Concordia University has launched a three-year, $600,000 institutional "Image Campaign" to support its recruitment and fund-raising programmes.

Directed at anglophone, francophone and allophone audiences, the campaign's creative strategy is predicated on the results of market research conducted during 1988 and 1989 among current Concordia students, CEGEP students, CEGEP faculty advisors, parents, alumni, faculty, staff and business leaders.

Using the slogan *"Real Education for the Real World"* in English and *"On vous prépare pour le monde"* in its French-language advertising, the campaign began in Montréal in mid-March. Later, it will be extended into the Toronto and Ottawa areas.



Montréal transit-system advertising panel

Successful Concordia graduates are featured in a variety of media extolling the benefits of a Concordia education. The producer of award-winning films *Jésus de Montréal* and *Un zoo la nuit* Pierre Gendron (BA '75), television Musique Plus video host Sonia Benezra (BFA '82) and Caisse centrale Desjardins President and Chief Operating Officer Humberto Santos (BComm '75 and MBA '79) appear on transit system panels in the initial stages of the advertising campaign.

English-language newspaper ads feature, among others, Engineering and Computer Science graduate and Bendix Avelex Inc. President Elli Segev (BEng '76). Later, messages will appear in the student press, TV commercials and a promotional video.

Some components of the campaign, such as the TV commercials, will run nationally on cable channels YTV, (the Youth Channel), TSN (the Television Sports Network), MuchMusic, and their French-language counterparts, Musique Plus and RDS (Réseau des Sports).

The campaign is the University's most extensive advertising effort ever. JOANISSE•ROBERTS Communications of Montréal has been chosen to co-ordinate the project. The Agency has worked for clients as varied as Molson Breweries, the Children's Wish Foundation and the Ontario Lottery Corporation.

FACULTY SPOTLIGHT

Engineering and Computer Science is a vibrant collection of people, places and activities. The Affiliate aims the spotlight on just a few of them.

* Recently, the **Concordia Student Chapter of the IEEE (Institute of Electrical and Electronics Engineers) Computer Society** was given the Award for Outstanding Performance of Chapter Activities. The Award was presented to Student Chapter President **Yaska Sankar** by IEEE Computer Society Vice-President, Area Activities, **Gerald Engel**. The Chapter was also given a $500 (US) cheque for "excellence and innovative service to student members of the IEEE Computer Society," and a commemorative plaque from President **Duncan Lawrie**. In addition, Sankar received one of four 1991 Richard E. Merwin Scholarships awarded in the world, valued at $3,000 (US).

* Concordia University has been elected to the grade of Affiliate Member in the Society of Manufacturing Engineers (SME) as an institution for the advancement of scientific knowledge in the field of manufacturing engineering. The Department of Mechanical Engineering hosts an SME chapter, for which Professor **Vojislav Latinovic** serves as Student Advisor. He has been designated Affiliate Representative with the grade of Senior Member of the SME.

* Centre for Building Studies (CBS) Director **Paul Fazio** was one the judges on the 1990 jury for the Canadian Consulting Engineering Awards. The Associate Director at CBS, **Ted Stathopoulos**, spoke on Radio Québec's *Omni Science* television programme about the building aerodynamics laboratory and his work on the effects of wind on buildings. **Krishnan Gowri**, one of Fazio's colleagues from SIRICON (the University's non-profit corporation formed to transfer computer application to the building industry), was quoted in *AI Expert*, a magazine on artificial intelligence.

* Jake Epp, Federal Minister of Energy, Mines and Resources, sent a letter to Rector **Patrick Kenniff** congratulating the University, the Faculty of Engineering and Computer Science, Dean **M.N.S. Swamy**, the Department of Mechanical Engineering, Chair **M.O.M. Osman**, student advisor **Tadeusz**

Continued on page 6

Future women engineers receive support within Faculty

by Mary Frances Hill

Female Engineering students at Concordia who feel isolated within the male-dominated Faculty may find encouragement in two new support networks.

The Women in Engineering and Computer Science Initiative has recently set up "Big Sister" and "Mentoring" programmes for the female minority student population in the Faculty.

In the Big Sister programme, female students in later years of study provide "sisters," new Engineering students, with advice and support.

The Mentor programme aims to support all women engineering students by using women with established engineering careers as role models, or mentors. These mentors may offer students advice on reaching their professional and personal goals.

Ease lonlines, build morale

Angela Plover, a fourth-year student in Mechanical Engineering and coordinator of the programmes, said she hopes they will ease loneliness and help build morale among women students in the Faculty.

"There are so few of us that when you experience a problem, you experience it alone," she said. "Knowing that there are other women with the same problems and hearing the way they deal with them is really helpful."

Thirteen per cent of the students enrolled in undergraduate Engineering programmes at Concordia in 1989-90 were women. Women enrolled in Engineering at the graduate level reached 10 per cent this year.

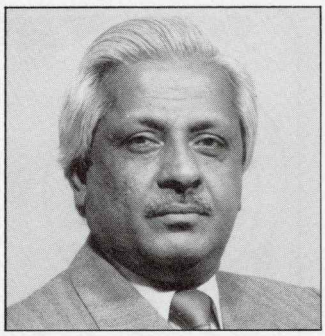
Diane Comtois, a Mechanical Engineering graduate, is now interim adviser to the Dean of Engineering and Computer Science on the Status of Women. The presence of a role model can do wonders for the self-esteem, she said.

"Each time I met a woman engineer, I felt validated in my choices," she said.

MEng (Aerospace) inviting applications

The Faculty is now accepting applications for the new Master degree in aerospace Engineering programme. For more information contact Dr. T.S. Sankar at (514) 848-3130.

Women in Engineering: the University context



M.N.S. Swamy, Dean of Engineering and Computer Science

Most of us are well aware of the projected shortage of engineers forecast by the Canadian Engineering Manpower Board and the Canadian Employment and Immigration Commission: a shortage so great that our national competitiveness will suffer as a result, and this in the next ten years. We need to convince more bright students to register in engineering programmes, and we must graduate more of them, more men and especially more women.

As a dean of engineering, I find it particularly frustrating that young women still largely orient themselves toward fields characterized by low pay and high unemployment rates. It is the lack of information and encouragement that young women, especially, are facing. But there are other aspects of the profession that discourage women from becoming engineers.

Women already in the professional area, either as working engineers or as students, face a male-dominated milieu with a tradition and attitude that unfortunately still discriminates against women. Some women are affected by this attitude and end up feeling isolated to the point of questioning their career choice.

In our faculty at Concordia University, we are trying to prevent this feeling of isolation. In January 1989, I set up a Committee on the Status of Women in Engineering and Computer Science charged with pinpointing specific areas that required attention. The Committee listed the following: improving the study environment for women in the Faculty, recruiting women students, instituting support programmes for women in the Faculty, and implementing strategies to promote understanding of the issues among students and faculty members.

During the summer of 1989, the Faculty funded a student researcher whose mandate was to study the enrolment differential between men and women in Engineering at Concordia and at other universities. Programmes and activities related to the status of women in Engineering and Computer Science in other universities were also examined. It was felt that top priority should be given to improving the climate for women students at Concordia, and then initiating active recruitment programmes.

In February 1990, we organized a symposium for faculty, staff and students titled "Excellence and Equality in the Engineering Profession," to increase awareness of the problems encountered by women in a male-dominated field. The panellists presented a highly informative outline of the situation of women in engineering in Canada.

Subsequently, the Committee recommended the appointment of an Advisor to the Dean on the Status of Women. In June 1990, Diane Comtois was appointed to this position in an acting capacity with responsibility to determine the needs of women students in the Faculty, to develop and oversee action plans and support programmes which will improve the study climate for students, and to increase the number of women graduates. The Advisor's Office is now establishing Big Sister and Mentoring programmes. (See article on page 4).

We recognize that these initiatives are only a beginning, but we have great expectations for the future. We feel these programmes will be helpful in eliminating the feeling of isolation some of our female students may feel.

As a profession and as a society, we can no longer afford to ignore women's potential to contribute to the advancement of this country. The outcome of our decision and the imagination and cooperation we put into implementing the necessary changes will shape our future and that of our children as Canadians.

'As a profession and as a society, we can no longer afford to ignore women's potential to contribute to the advancement of this country.'

Event List May to September 1991

ONGOING EVENTS

Conservatoire d'art cinématographique
Regular presentations of repertory films. Open to the general public. All showings in the Henry F. Hall Building, 1455 de Maisonneuve Boulevard West. For more information and listings, call (514) 848-3878.

Visual Arts Building Gallery
Weekly exhibits of undergraduate student works. 1395 René-Levesque Boulevard. For information, call (514) 848-4676.

Bourget Building Gallery
Weekly exhibits of graduate student works. 1230 Mountain Street. For information, call (514) 848-4607.

Contemporary Dance: Student Productions
For information, call (514) 848-4740.

Concordia Art Gallery
May 16th - June 22nd: Marion Wagschal: Bacchus/Bacchante
June 27th - July 20th: Undergraduate Student Exhibition

SPECIAL EVENTS

20th Annual Workshop on Instruction in Library Use
Held at Loyola Campus from May 22 to 24th. For more information call Helena Gameiro at (514) 848-7761.

CONCORDIA CONCERT HALL

7141 Sherbrooke Street West (Loyola Campus). (Metro Vendome - 105 bus). For ticket information and the full schedule of concerts, call (514) 848-7928. Concerts at 8:00 p.m. Programme subject to change.

Saturday, May 11th - Natasha Turovsky - violin. Diploma Recital.
Sunday, May 12th - SPCA Benefit.
Monday, May 13th - Angela Chen - piano. Diploma Recital.
Tuesday, May 14th - Marlene Basarb - piano. Diploma Recital.
Wednesday, May 15th - Laurie Milkman and guests.
Thursday, May 16th - Thierry Prieur - piano. Diploma Recital.
Friday, May 17th - Jia Yu Xie - piano. Diploma Recital.
Saturday, May 18th - Laura Fenster - piano. Diploma Recital.
Sunday, May 19th - Laurie Milkman and guests

ALUMNI EVENTS

Friday, May 24th, Blue Bonnets
Enjoy a night at the races. For more information, call the Office of Alumni Affairs at (514) 848-3817.

Second Annual Homecoming
Weekend of events to take place October 3rd, 4th, 5th. For more information, call the Office of Alumni Affairs at (514) 848-3815.

Faculty Affiliation Programme

The Affiliate for supporters of the Faculty of Engineering and Computer Science is published by the Faculty in association with the Office of University Advancement and the Public Relations Department.

The Faculty Affiliation Programme at Concordia University is a vehicle for recognition of important donors to the Annual Giving Programme. Different activities are planned for Faculty Supporters (donors of $100 or more per year), Faculty Associates (donors of $250 or more per year), and members of the Dean's Circle (donors of $500 or more per year) all of whom will receive **The Affiliate** on a regular basis.

Results of the Annual Giving Programme will be published in the **Concordia University Magazine.**

Affiliate Editorial Board: T.S. Sankar, Robert Eschenasi (University Advancement), Laurie Zack (Public Relations).

For further information, call the Office of University Advancement (514) 848-4856.

The Faculty of Engineering and Computer Science Profile 1990-91

Dr. M.N.S. Swamy, Dean
Dr. T. Fancott, Associate Dean
Prof. F.D. Hamblin, Associate Dean
Dr. G.D. Xistris, Assistant Dean, Planning & Priorities
Dr. T.S. Sankar, Special Coordinator, Research & External Relations
Dr. P.P. Fazio, Director, Building Studies
Dr. O. Pekau, Chair, Civil Engineering
Prof. G. Martin, Acting-Chair, Computer Science
Dr. P. Ziogas, Chair, Electrical and Computer Engineering
Dr. M.O.M. Osman, Chair, Mechanical Engineering

Students:
Graduate: 452 Full-time, 129 Part-time;
Undergraduate: 1,319 Full-time, 598 Part-time;

Operating Budget: $13,898,938
Total Research Grants and Contracts: (1989-90): $6,467,631

The Affiliate Contact Person: Dr. T.S. Sankar: (514) 848-3130.

Continued from page 4

Krepec and the students who prepared the successful proposal for the natural gas conversion of the General Motors truck.

* Federal Minister of Industry, Science and Technology **Benoit Bouchard** announced the government's support for the Canadian Association for Composite Structures and Materials (CACSMA) with the announcement of a $596,000 grant. CACSMA was conceived, initiated and founded by Mechanical Engineering Professor **S.V. Hoa,** who has been President of the Association since its inception in November 1988.

* In May, *Dataquest*, a major high-tech magazine in India, sent one its senior editors, **Shashi Bhagnari**, to Canada to meet representatives of high-tech organizations in Ottawa and Montréal. The resulting article, "Who's interested in India?" included a profile of CONCAVE (the Concordia Computer-Aided Vehicle Engineering Centre) and its Director, **Seshadri Sankar**.